IN THE CLAIMS

Please cancel claim 4 and amend claims 1, 5-8, 10, 11, 14, and 15 as follows:

Claim 1. (Currently amended): A method of reconstructing a previously produced signal from a given set of data, with the set of data characterized by a first prediction function representing a predictable effect of an apparatus on the previously produced signal, and a noise function representing unpredictable noise contributed to the previously produced signal, the method comprising the steps of:

altering the an original coordinate basis of the set of data and signal from an original coordinate basis in order to produce a prediction function having a reduced set of variables to produce at least one other coordinate basis, the at least one other coordinate basis having a plurality of spaces with a lower dimensionality than a space within the original coordinate basis, the set of data in the at least one other coordinate basis represented by a second prediction function of the previously produced signal in the at least one other coordinate basis;

performing a Bayesian reconstruction utilizing the second prediction function to produce a reconstruction signal, the Bayesian reconstruction utilizing a maximum entropy method capable of operation of on positive, negative, and complex signal values to produce a reconstruction signal; and

converting the reconstruction signal back into the original coordinate basis to generate a the previously produced signal.

Claim 2. (Original): A method according to claim 1, wherein the Bayesian reconstruction is performed using a Fourier basis.

Claim 3. (Original): A method according to claim reconstruction is performed using 1, wherein the Bayesian reconstruction is performed using a wavelet basis.

Claim 4. (Cancelled)

Claim 5. (Currently amended): A method according to claim [[4]] 1, employing an evaluation parameter, α, which is determined from a prior reconstruction.

Claim 6. (Currently amended): A method according to claim [[4]] 1, employing an evaluation parameter, α, which is set at a fixed value.

Claim 7. (Currently amended): A method according to claim [[4]] 1, employing an evaluation parameter, α, which is determined during the reconstruction step.

Claim 8. (Currently amended): A method according to claim 1, wherein the previously produced signal to be reconstructed is an image signal.

Claim 9. (Original): A method according to claim 8, wherein the image signal is a medical image signal.

Claim 10. (Currently amended): A method according to claim 1, wherein the previously produced signal to be reconstructed is a radar signal.

Claim 11. (Currently amended): A method according to claim 1, wherein the previously produced signal to be reconstructed is an acoustic data signal.

Claim 12. (Original): A method according to claim 11, wherein the acoustic data signal is an underwater sonar signal.

Claim 13. (Original): A method according to claim 11, wherein the acoustic data signal is a geophysical data signal.

Claim 14. (Currently amended): A method according to claim 1, wherein the previously produced signal to be reconstructed is a signal from spectroscopy.

Claim 15. (Currently amended): A method according to claim 1, wherein the previously produced signal is a communication signal.

Claim 16. (Previously presented): A method according to claim 15, wherein the communication signal is a time-series signal.